Serial No.: 10/053,172 Filed: January 17, 2002

Page : 3 of 11

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A system comprising:

a parallel processor that assigns system functions for processing data, the parallel processor comprising:

a plurality of programming engines that support multiple contexts, the plurality of programming engines arranged to provide a functional pipeline; [[and]]

a functional pipeline control unit that assigns system function functions to and passes functional data among the plurality of programming engines; and

a critical section that provides exclusive privileges to one of the multiple contexts for modifying a shared resource.

- 2. (Currently Amended) The system of claim 1 further comprising:
- a synchronization unit across the functional pipeline unit <u>for synchronizing tasks</u> performed by the <u>programming engines</u>.
- 3. (Original) The system of claim 1 wherein the functional pipeline unit includes a plurality of functional pipeline stages.
- 4. (Original) The system of claim 3 wherein the plurality of programming engines have an execution time for processing a task and the execution time is partitioned into a number of time intervals corresponding to the number of the plurality of functional pipeline stages.

Serial No.: 10/053,172

Filed: January 17, 2002

Page : 4 of 11

5. (Previously Presented) The system of claim 4 wherein each of the plurality of functional pipeline stages performs a different system function.

- 6. (Original) The system of claim 1 wherein at least one of the plurality of programming engines is the functional pipeline unit.
- 7. (Original) The system of claim 1 wherein the plurality of programming engines are configured to process a data packet in order.
- 8. (Original) The system of claim 7 wherein the data packet are assigned to the multiple contexts of the plurality of programming engines.
- 9. (Original) The system of claim 1 wherein the plurality of programming engines are configured to execute a data packet processing function using the functional pipeline unit of the system.
- 10. (Original) The system of claim 9 wherein a data packet is maintained in the plurality of programming engines for a period of time corresponding to the number of the plurality of programming engines.
- 11. (Original) The system of claim 3 wherein the number of the plurality of pipeline stages is equal to the number of the plurality of programming engines.
- 12. (Currently Amended) The system of claim 3 wherein the plurality of pipeline stages include [[a]] the critical section.
- 13. (Original) The system of claim 12 wherein the critical section provides exclusive access for the multiple contexts to non-shared data required for processing data packets.

Serial No.: 10/053,172 Filed: January 17, 2002

Page : 5 of 11

14. (Original) The system of claim 3 wherein the plurality of programming engines include inter-thread signaling.

- 15. (Original) The system of claim 3 wherein the plurality of programming engines include an elasticity buffer that accommodates jitter between the plurality of pipeline stages upon execution of a data packet processing function.
- 16. (Currently Amended) A method of transferring data between a plurality of programming engines, the method comprising:

assigning system functions for processing data to corresponding ones of a plurality of programming engines that provide a functional pipeline unit in a parallel processor and, which supports execution of multiple contexts in each of the plurality of programming engines; [[and]]

passing functional data among the plurality of programming engines in the functional pipeline unit; and providing exclusive privileges to one of the multiple contexts for modifying a shared resource.

- 17. (Currently Amended) The method of claim 16 further comprising: synchronizing the system functions accross from a first programming engine of the functional pipeline unit to a second programming engine of the functional pipeline unit.
- 18. (Previously Presented) The method of claim 17 further comprising: partitioning an execution time into a number of time intervals corresponding to the number of plurality of pipeline stages.
- 19. (Original) The method of claim 16 wherein the plurality of programming engines use multiple contexts to process the data packet in order.

Serial No.: 10/053,172 Filed: January 17, 2002

Page : 6 of 11

20. (Original) The method of claim 16 wherein the plurality of programming engines execute a data packet processing functions using the functional pipeline unit of the system.

- 21. (Previously Presented) The method of claim 16 further comprising:
 using a critical section that provides exclusive access for the multiple contexts to nonshared data required for processing data packets.
- 22. (Previously Presented) The method of claim 16 further comprising:
 employing an elasticity buffer to accommodate jitter between the plurality of pipeline
 stages upon execution of a data packet processing function.
- 23. (Currently Amended) A computer program product residing on a computer readable medium for causing a parallel processor to perform a function comprises instructions causing the processor to:

assign system functions for processing data in a parallel processor to corresponding ones of a plurality of programming engines that provide a functional pipeline unit, which supports execution of multiple contexts in each of the plurality of programming engines; [[and]]

pass functional data among the plurality of programming engines in the functional pipeline unit; and

provide exclusive privileges to one of the multiple contexts for modifying a shared resource.

24. (Currently Amended) The computer program product of claim 23 further comprising instructions causing the processor to synchronize the system functions accross from a first programming engine of the functional pipeline unit to a second programming engine of the functional pipeline unit.

Serial No.: 10/053,172 Filed: January 17, 2002

Page : 7 of 11

25. (Original) The computer program product of claim 23 wherein the plurality of programming engines execute a data packet processing functions using the functional pipeline unit of the system.